



# Real - Time Water level Monitoring Powered by **Intellia IoT Business Solutions**

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December 17<sup>th</sup> 2018 - Biz4Intellia

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**Implemented in US and Australia**

*BizIntellia*  
An end-to-end IoT Solution

## Executive Summary

**Herd Logix**, a pioneer in automated water management, was looking for sustainable real-time water level monitoring solution to be implemented with some additional benefits like reduced power consumption and water wastage. Biz4intellia provided a robust level monitoring solution by utilizing their existing industrial IoT business solution, Intellia IoT. The solution empowered the end-users to ensure uninterrupted water supply for their irrigation practices.



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*Biz4Intellia delivered a cost-efficient water level monitoring solution within 4 weeks. The solution contributed to our efforts to transform the Agricultural Industry.*

**George (Founder)**

## Challenge: Real time Remote Water Level Monitoring at various water sites

With many droughts and water scarcity problems happening across the world, knowing the exact volume of water can help to provide uninterrupted water supply. The real challenge begins with how to monitor the water level from remote locations? The available solutions in the market cost way too much and may or may not do the job. Because it is hard to build a cost-efficient level monitoring solution which empowers to remotely monitor the water level of water bodies.

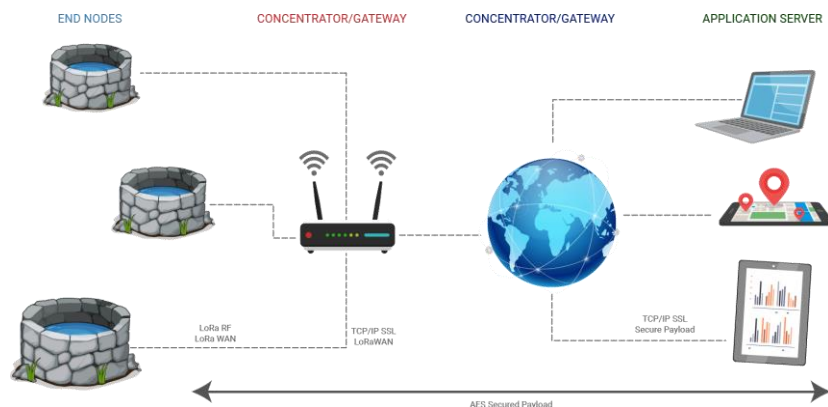


## Deep Dive into Technical Solution

Biz4Intellia configured its Intellia IoT business solution over the LoRaWAN technology and provided the real-time remote level monitoring in just four weeks. Biz4intellia developed a robust architecture for real-time water level monitoring over the LoRaWAN technology.

LoRaWAN is a long range, low power wireless protocol (MAC protocol) which is used for building IoT networks. LoRaWAN is a wireless technology where a low powered sender i.e. end nodes transmits small data packages (0.3 kbps to 5.5 kbps) in the form of payloads to a receiver over a long distance. The Gateways (mounted far away from the End-Nodes), receives the messages from End-Nodes and then transmit them to a network server. Network server validates the messages/data (received in packets) and finally forward the application payload to an application server.

## The architecture of LoRaWAN

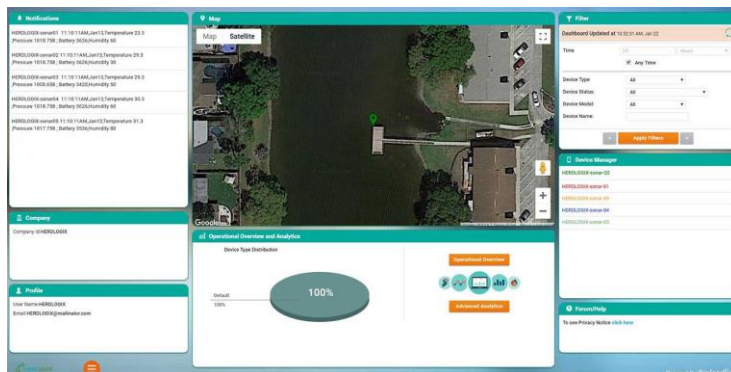


## Role of Multiple Connected Things:

- ✓ End Nodes are the low-power communication devices, which basically are LoRaWAN embedded sensors.
- ✓ Gateways/Telemetry devices receive the encrypted data from end nodes and further transmits it to cloud.
- ✓ Network Server is a cloud-based platform solution like TTN (The Things Networks). The network server De-dupe the data packets (payloads) and then routes it to the relevant application. Network servers can be used for both uplinks and downlinks.
- ✓ The application is basically a piece of software that runs over a server. It can typically be built on an IoT Platform.

## Intellia IoT Business Solutions

The data, which is ingested from the field (Water Wells) using IoT sensors, gets available to users and administrators on Intellia IoT application dashboard. The dashboard is easily customizable as per requirements. The Intellia IoT App, configured for Herd Logix, was personalized for level monitoring and has two dashboards in it – Operational Dashboard and Device manager Dashboard. The operational dashboard works like a control panel where you can see all the activities going on the field. The users are able to locate their water bodies on the map and gets instant alerts of unanticipated events such as an unusual rise in the water level. The information shown on the operational dashboard is categorized in cards (Panels). The card layout makes the dashboard easily configurable according to one's needs.



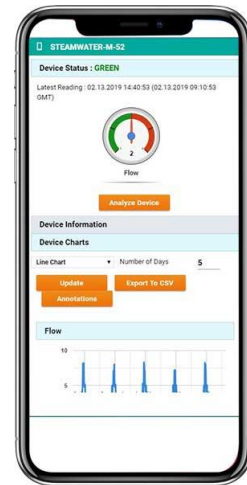
[View Demo](#)

## Device Management

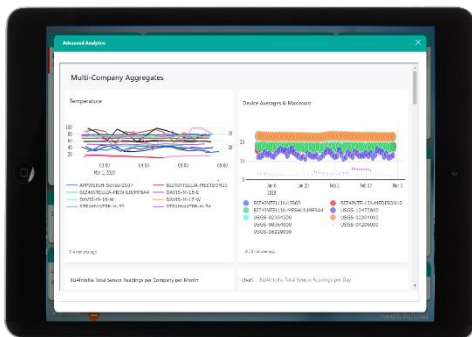
All of the devices (Level Sensors) are shown on the Device Manager Card. This empowered the user to configure any device and set threshold limits anytime anywhere. Threshold values trigger the notifications in such a way that if any of the IoT devices crosses those pre-defined threshold limits, users are alerted immediately.

The users can see the level of any of their water bodies on the color-coded pictorial charts.

- ✓ Know where your devices are located at with just a tap on the device icon.
- ✓ Set threshold limit of your device anytime anywhere using the mobile app.
- ✓ Register a new device or access all your devices from one window.
- ✓ Make intelligent business decisions by analyzing graphically represented historical data.



## Advanced Analytics



This solution not only provided the real-time visibility of water bodies but also provided the users with Advanced Analytics. Advanced Analytics makes use of the historical water level data to predict the rises and falls in the water level. The users can manage their water stock efficiently and never gets out of water.



## Level Monitoring Sonar Sensor

### Specification:

- ✓ IP67 rated MaxS
- ✓ Sonar ultrasonic rangefinders offer 1mm resolution, 2.7-5.5VDC operation, a narrow beam pattern, high power output, noise rejection, automatic calibration, and temperature compensation. The output options for this ultrasonic sensor line are pulse-width and analog voltage.

- ✓ ELT-2-HP is a general LoRaWAN™ device that measures analog or digital signals. ELT-2-HP is enclosed in an IP67 box and is designed to be outside. Inside the ELT-2-HP you will find four internal sensors: A temperature sensor, a humidity sensor, an accelerometer, and an atmospheric pressure sensor. ELT-2-HP is powered by a 3,6V AA lithium battery (ER14505). The Battery life is estimated to be up to 10 years but depends on sample interval, transmit interval, data rate, and environmental factors.



**Maxbotix sensor ELT-2-HP (Ultrasound sensor)**

## Business Benefits

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The capability to know the level of water bodies is helping the solution-users in building an effective irrigation practice for a sustainable future. The solution is helping them to plan better thus reducing the water wastage and channeling the irrigation process to

- ✓ Proper Irrigation
- ✓ Water Conservation
- ✓ Effective Planning
- ✓ Reduced Operational Overheads

## Why Biz4Intellia

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Biz4Intellia is an End-to-End IoT (Internet of Things) Solution Provider, which caters to the remote monitoring need of multiple industry verticals including Transportation & Logistics, Water, Oil & Gas, and Agriculture.

Here is why Biz4Intellia is a perfect pick for IoT requirements:

- ✓ Quick to market (4-5 weeks)
- ✓ Customizable Pricing Model (Pay-per-use)
- ✓ One-Stop Shop (A complete Hardware and Software Solution)
- ✓ Event Driven Architecture